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EXAMINER	
COUSO, JOSE L	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/581,874	KIM ET AL.	
	Examiner	Art Unit	
	Jose L. Couso	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/31/06,10/24/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows (see also MPEP 2106):

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.
>
> When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).
>
> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

2. Claims 28-31 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 28-31 define a recording medium embodying functional descriptive material (i.e., a computer program or computer executable code). However, the claim does not define a "computer-readable medium or computer-readable memory" and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention

encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Note:

"A transitory, propagating signal … is not a "process, machine, manufacture, or composition of matter." Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter." (In re Nuijten, 84 USPQ2d 1495 (Fed. Cir. 2007). Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory. Should the applicant's specification define or exemplify the computer readable medium or memory (or whatever language applicant chooses to recite a computer readable medium equivalent) as statutory tangible products such as a hard drive, ROM, RAM, etc, **as well as** a non-statutory entity such as a "signal", "carrier wave", or "transmission medium", the examiner suggests amending the claim to *include* the disclosed tangible computer readable storage media, while at the same time *excluding* the intangible transitory media such as signals, carrier waves, etc.

Merely reciting functional descriptive material as residing on a “tangible” or other medium is not sufficient. If the scope of the claimed medium covers media other than “computer readable” media (e.g., “a tangible media”, a “machine-readable media”, etc.), the claim remains non-statutory. The full scope of the claimed media (regardless of what words applicant chooses) should not fall outside that of a computer readable medium.

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO “Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility” (Official Gazette notice of 22 November 2005), Annex IV, reads as follows (see also MPEP 2106):

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.
>
> When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).
>
> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

4. Claims 1-18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 1-18 define a “system”.

However, while the preamble defines a "system", which would typically be indicative of an "apparatus", the body of the claim lacks definite structure indicative of a physical apparatus. Furthermore, the specification indicates that the invention may be embodied as pure software on page 4, line 25 through page 5, line 3. Therefore, the claim as a whole appears to be nothing more than a "system" of software elements, thus defining functional descriptive material per se.

Functional descriptive material may be statutory if it resides on a "computer-readable medium or computer-readable memory". The claim(s) indicated above lack structure, and do not define a computer readable medium and are thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests:

1. Amending the claim(s) to embody the program on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory; or

2. Adding structure to the body of the claim that would clearly define a statutory apparatus.

Any amendment to the claim should be commensurate with its corresponding disclosure.

Note:

"A transitory, propagating signal … is not a "process, machine, manufacture, or composition of matter." Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter." (*In re Nuijten*, 84 USPQ2d 1495 (Fed. Cir. 2007)).

Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory. Should the applicant's specification define or exemplify the computer readable medium or memory (or whatever language applicant chooses to recite a computer readable medium equivalent) as statutory tangible products such as a hard drive, ROM, RAM, etc, **as well as** a non-statutory entity such as a "signal", "carrier wave", or "transmission medium", the examiner suggests amending the claim to *include* the disclosed tangible computer readable storage media, while at the same time *excluding* the intangible transitory media such as signals, carrier waves, etc.

5. Claims 19-27 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent[1] and recent Federal Circuit decisions[2] indicate that a statutory "process" under 35 U.S.C. 101 must (1) be

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[1] *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

[2] *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. For example the compression method including steps of segmenting, encoding, calculating and combining is of sufficient breadth that it would be reasonably interpreted as a series of steps completely performed mentally, verbally or without a machine. The Applicant has provided no explicit and deliberate definitions of "segmenting", "encoding", "calculating" and "combining" to limit the steps and the claim language itself is sufficiently broad to read on a person mentally going through the steps.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 7-9, 12-19 and 22-31 are rejected under 35 U.S.C. 102(b) as being anticipated by You et al. (U.S. Patent No. 5,581,361).

With regard to claim 1, You describes an image segmentation unit for segmenting an image into a plurality of sub-images (refer for example to column 6, lines 54-59); a first encoding unit for encoding the sub-images to output sub-image

bitstreams (refer for example to column 6, lines 59-63); a BMAP (bitstream map) construction unit for calculating the quantity of information on each sub-image bitstream and generating BMAP information using the calculated quantity of information and information on construction of each sub-image (refer for example to column 7, lines 1-12, where the TBM signal is the transmitted bitstream map signal); and a bitstream combining unit for combining the sub-image bitstreams and the BMAP information (refer for example to column 7, lines 12-20).

As to claim 7, You describes wherein the bitstream combining unit combines the BMAP information with the head of the sub-image bitstreams (refer for example to column 7, lines 7-9).

In regard to claim 8, You describes wherein the first encoding unit encodes the sub-images based on JPEG (refer for example to column 6, line 60).

With regard to claim 9, You describes a first encoding unit for encoding a base-layer image and outputting it as a first bitstream (refer for example to column 6, lines 59-63); an image segmentation unit for segmenting an enhancement-layer image into a plurality of sub-images, and outputting them (refer for example to column 6, lines 54-59); a second encoding unit for encoding the sub-images output by the image segmentation unit, and outputting them as a second bitstream (refer for example to column 7, lines 1-5); a BMAP (bitstream map) construction unit for calculating an information amount of the second bitstream, using the information amount and configuration information of the sub-images, and generating BMAP information (refer for

example to column 7, lines 1-12, where the TBM signal is the transmitted bitstream map signal); and a bitstream combining unit for combining the second bitstream and the BMAP information, and outputting combined data (refer for example to column 7, lines 12-20).

As to claim 12, You describes a bitstream receiving unit for receiving bitstreams of an image including a plurality of sub-images (see figure 14, element "CHANNEL DEMODULATOR" and refer for example to column 8, lines 28-31); a BMAP reading unit for reading BMAP information included in the bitstreams and outputting information on a sub-image to be decoded among the plurality of sub-images (see figure 14, element "SYNC & HEADER GENERATOR" and refer for example to column 8, lines 28-31); a sub-image extracting unit for extracting a bitstream corresponding to the sub-image to be decoded from the bitstreams using the information on the sub-image to be decoded (see figure 14, element "INNER DECODER" and refer for example to column 8, lines 28-31); and a sub-image decoding unit for decoding the bitstream extracted by the sub-image extracting unit (see figure 14, element "OUTER DECODER" and refer for example to column 8, lines 28-31).

In regard to claim 13, You describes wherein the BMAP information includes information on construction of each sub-image and the quantity of information of each sub-image bitstream (refer for example to column 7, lines 7-15).

With regard to claim 14, You describes further comprising an interface unit for providing interface through which a user selects a region to be decoded from the first image (refer for example to column 2, line 15 and column 4, lines 64-66).

As to claim 15, You describes wherein the information on the sub-image represents the position in the bitstreams of the first image, which includes the bitstream of the sub-image to be decoded (as illustrated in figures 15-20).

In regard to claim 16, You describes a first decoding unit for decoding a bitstream of a base-layer image, and outputting it (see figure 14, element “CHANNEL DEMODULATOR” and refer for example to column 8, lines 28-31); a BMAP reading unit for reading BMAP information included in the bitstream of an enhancement image including a plurality of sub-images, and outputting information of a sub-image to be decoded from among the sub-images (see figure 14, element “SYNC & HEADER GENERATOR” and refer for example to column 8, lines 28-31); a sub-image extracting unit for using information on the sub-image to be decoded, and extracting a bitstream which corresponds to the sub-image to be decoded (see figure 14, element “INNER DECODER” and refer for example to column 8, lines 28-31); and a second decoding unit for decoding the bitstream extracted by the sub-image extracting unit, and outputting the decoded bitstream (see figure 14, element “OUTER DECODER” and refer for example to column 8, lines 28-31).

With regard to claim 17, You describes further comprising an up-sampling unit for up-sampling the output image of the first decoding unit, and a summing unit for

summing up the image output from the up-sampling unit and the image output from the second decoding unit (see figure 14, elements “DEFORMATTER & INTER-SYMBOL DEINTERLEAVED” and refer for example to column 8, lines 28-31).

As to claim 18, You describes wherein the second decoding unit carries out interframe decoding (as illustrated in figure 17).

With regard to claim 19, You describes segmenting the first image into a plurality of sub-images (refer for example to column 6, lines 54-59); encoding the sub-images to generate sub-image bitstreams (refer for example to column 6, lines 59-63); calculating the quantity of information of each sub-image and generating BMAP information using the calculated quantity of information and information on construction of each sub-image (refer for example to column 7, lines 1-12, where the TBM signal is the transmitted bitstream map signal); combining the sub-image bitstreams and the BMAP information to generate frame bitstreams (refer for example to column 7, lines 1-5); and combining the frame bitstreams to form the bitstream of the input image (refer for example to column 7, lines 12-20).

In regard to claim 22, You describes encoding a base-layer image and outputting it as a first bitstream (refer for example to column 6, lines 59-63); segmenting an enhancement image into a plurality of sub-images; encoding the sub-images and outputting them as a second bitstream (refer for example to column 6, lines 54-59); calculating an information amount of the second bitstream, using the information amount and configuration information of the sub-image, and generating BMAP

information (refer for example to column 7, lines 1-12, where the TBM signal is the transmitted bitstream map signal); combining the bitstream of the sub-images and the BMAP information to generate frame bitstreams (refer for example to column 7, lines 1-5); and combining the frame bitstreams, and outputting combined data (refer for example to column 7, lines 12-20).

With regard to claim 23, You describes before encoding the base layer, down sampling the input image to generate the base-layer image (refer for example to column 6, lines 54-59).

In regard to claim 24, You describes further comprising, after encoding a base layer, outputting a difference between the input image after the encoded base layer and the up sampled image generated by decoding the first bitstream to the enhancement image (refer for example to column 6, lines 59-63).

With regard to claim 25, You describes receiving bitstreams of an image including a plurality of sub-images (see figure 14, element “CHANNEL DEMODULATOR” and refer for example to column 8, lines 28-31); reading information on a sub-image corresponding to a region to be decoded among the plurality of sub-images using BMAP information included in the bitstreams (see figure 14, element “SYNC & HEADER GENERATOR” and refer for example to column 8, lines 28-31); and extracting a bitstream corresponding to the sub-image to be decoded from the bitstreams (see figure 14, element “INNER DECODER” and refer for example to column 8, lines 28-31).

As to claim 26, You describes wherein the BMAP information includes information on construction of each sub-image and the quantity of information of each sub-image bitstream (see figure 14, element “SYNC & HEADER GENERATOR” and refer for example to column 8, lines 28-31).

In regard to claim 27, You describes decoding a bitstream of a base-layer image, and outputting the decoded bitstream, using BMAP information included in a bitstream of an enhancement layer including a plurality of sub-images, and reading information on a sub-image corresponding to a region to be decoded from among the sub-images (see figure 14, element “SYNC & HEADER GENERATOR” and refer for example to column 8, lines 28-31); using information on the sub-image to be decoded, and extracting a bitstream corresponding to the sub-image to be decoded from among the enhancement layer image (see figure 14, element “INNER DECODER” and refer for example to column 8, lines 28-31); and decoding the extracted bitstream, and outputting the decoded bitstream (see figure 14, element “OUTER DECODER” and refer for example to column 8, lines 28-31).

With regard to claim 28, You describes a program (refer for example to column 4, line 56) receiving an image including at least one frame and segmenting the image into a plurality of sub-images (refer for example to column 6, lines 54-59); encoding the sub-images to generate sub-image bitstreams (refer for example to column 6, lines 59-63); calculating the quantity of information of each sub-image bitstream and generating BMAP information using the calculated quantity of information and information on construction of each sub-image (refer for example to column 7, lines 1-12, where the

TBM signal is the transmitted bitstream map signal); and combining the sub-image bitstreams and BMAP information to generate frame bitstreams (refer for example to column 7, lines 12-20).

As to claim 29, You describes further comprising combining the frame bitstreams to form the bitstream of the image when the image includes multiple frames (as illustrated in figure 17).

In regard to claim 30, You describes a recording medium storing an image decoding program (refer for example to column 4, line 56) comprising receiving bitstreams including a plurality of sub-images (see figure 14, element "CHANNEL DEMODULATOR" and refer for example to column 8, lines 28-31); reading information on a sub-image including a region to be decoded among the plurality of sub-images using BMAP information included in the bitstreams (see figure 14, element "SYNC & HEADER GENERATOR" and refer for example to column 8, lines 28-31); and extracting a bitstream corresponding to the sub-image to be decoded from the bitstreams (see figure 14, element "INNER DECODER" and refer for example to column 8, lines 28-31).

With regard to claim 31, You describes wherein the BMAP information includes information on construction of each sub-image and the quantity of information of each sub-image bitstream (see figure 14, element "SYNC & HEADER GENERATOR" and refer for example to column 8, lines 28-31).

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Verbiest et al., Vetro et al., Morimoto et al., and Nie et al. all disclose systems similar to applicant's claimed invention.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jose L. Couso whose telephone number is (571) 272-7388. The examiner can normally be reached on Monday through Friday from 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner, can be reached on (571) 272-7401. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jose L. Couso/
Primary Examiner, Art Unit 2624
February 24, 2009